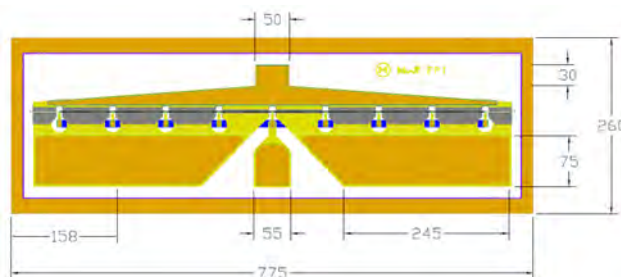


MwT-1F 12 GHz High Gain GaAs FET

Features:

- 10 dB Gain at 12 GHz
- 26 dBm Output Power at 18 GHz
- Excellent for High Linearity Amplifier Applications
- Ideal for Commercial, Military, Hi-Rel Space Applications
- 0.25 μm Refractory Metal / Gold Gate
- 630 μm Gate Width
- Choice of Chip and Three Package Types



Chip Dimensions: 775 x 260 μm
Chip Thickness: 100 μm

Description:

The MwT-1F is a GaAs MESFET device whose nominal 0.25 μm gate length and 630 μm gate width make it ideally suited to applications requiring high-gain and linearity up to 18 GHz. MwT-1F is equally effective for either wideband (e.g. 2 to 6 GHz) or narrow-band applications. All chips are passivated with SiN (Silicon Nitride).

RF Specifications: at $T_a = 25^\circ\text{C}$

PARAMETERS & CONDITIONS	SYMBOL	FREQ	UNITS	MIN	TYP
Output Power at 1dB Compression $V_{ds}=7.0\text{V}$ $I_{ds}=0.6 \times I_{DSS}$	P1dB	12 GHz	dBm	25.0	26.0
Output Third Order Intercept Point $V_{ds}=7.0\text{V}$ $I_{ds}=0.6 \times I_{DSS}$	OIP3	12 GHz	dBm	35	37
Power Added Efficiency $V_{ds}=7.0\text{V}$ $I_{ds}=0.6 \times I_{DSS}$	PAE	12 GHz	%	35	
Small Signal Gain $V_{ds}=6.0\text{V}$ $I_{ds}=0.6 \times I_{DSS}$	SSG	12 GHz	dB	9.0	10.0
Optimum Noise Figure $V_{ds}=3.0\text{V}$ $I_{ds}=90\text{mA}$	NF _{opt}	12 GHz	dB		2.0
Gain @ Opt NF $V_{ds}=3.0\text{V}$ $I_{ds}=90\text{mA}$	GAIN	12 GHz	dB		7.0

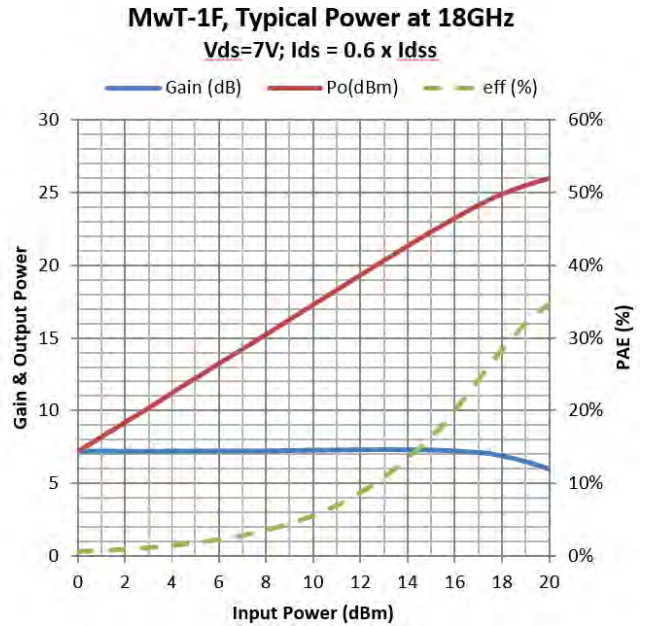
DC Specifications: at $T_a = 25^\circ\text{C}$

PARAMETERS & CONDITIONS	SYMBOL	UNITS	MIN	TYP	MAX
Saturated Drain Current $V_{ds}=4.0\text{V}$ $V_{gs}=0.0\text{V}$	I_{DSS}	mA	180		220
Transconductance $V_{ds}=4.0\text{V}$ $V_{gs}=0.0\text{V}$	G _m	mS	80	100	
Pinch-off Voltage $V_{ds}=3.0\text{V}$ $I_{ds}=4.0\text{mA}$	V _p	V		-2.0	
Gate-to-Source Breakdown Voltage $I_{gs}=-1.0\text{mA}$	BVGSO	V	-16	-17	
Gate-to-Drain Breakdown Voltage $I_{gd}=-1.0\text{mA}$	BVGDO	V	-15	-16	
Thermal Resistance <i>MwT-1F chip & 71 pkg 70 pkg & 73 pkg</i>	R _{th}	C/W			65 165*

*Overall R_{th} depends on case mounting

MwT-1F

12 GHz High Gain GaAs FET



ESD Caution

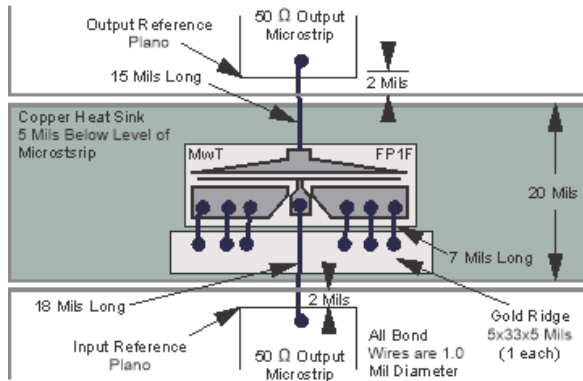


High-performance RF integrated circuits are highly sensitive to electrostatic discharge (ESD) and may contain unprotected inputs and outputs. Handling and assembly should be conducted in an ESD-controlled environment. It is recommended that ESD precautions and protocols are adopted to minimise the risk of electrostatic discharge and protect product integrity.

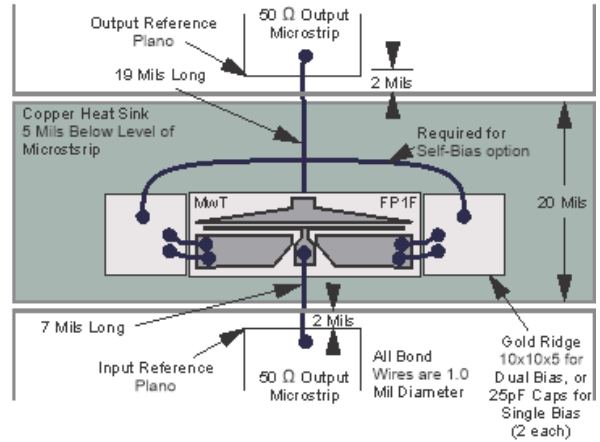
MwT-1F

12 GHz High Gain GaAs FET

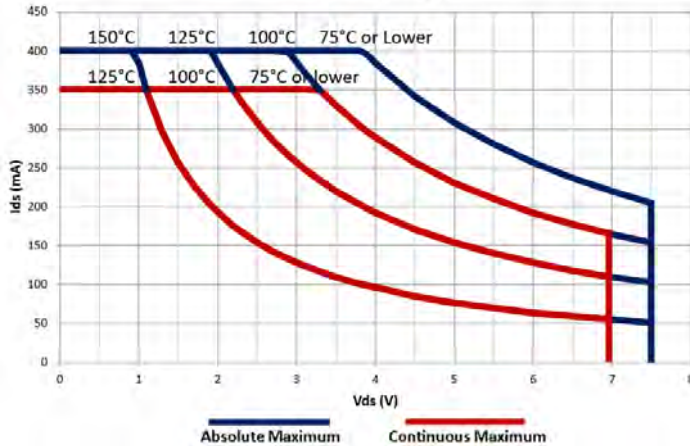
**MwT-1F
DUAL BIAS**



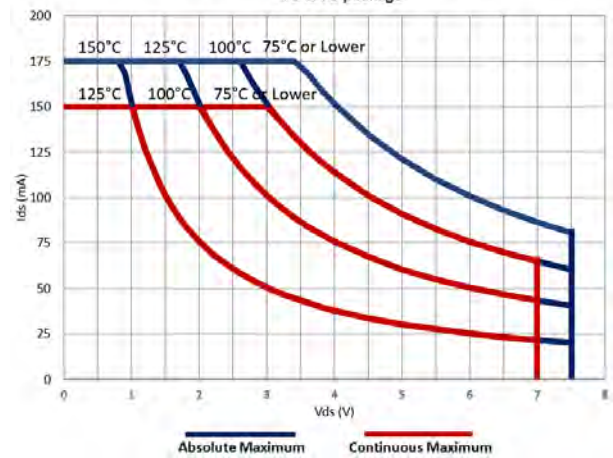
**MwT-1F
OPTIONAL BONDING**



**Safe Operating Limits vs Backside temperature
Chip & 71 package**



**Safe Operating Limits vs Backside Temperature
70 & 73 package**



MwT-1F

12 GHz High Gain GaAs FET

S-PARAMETER Vds = 6 V, Ids = 0.7 x Idss

Freq.	S11		S21		S12		S22		K	GMAX
GHz	dB	Ang (°)	dB	Ang (°)	dB	Ang (°)	dB	Ang (°)		dB
1	-0.765	-29.260	16.302	159.098	-34.610	75.507	-5.350	-12.676	0.475	25.456
2	-1.191	-55.072	15.454	140.658	-29.750	63.008	-5.818	-24.083	0.456	22.602
3	-1.668	-77.151	14.367	125.362	-27.205	53.987	-6.324	-33.072	0.517	20.786
4	-2.088	-95.058	13.143	112.629	-26.114	48.036	-6.809	-40.757	0.625	19.629
5	-2.467	-110.344	11.981	100.848	-25.314	43.546	-7.148	-48.094	0.740	18.648
6	-2.811	-121.971	10.874	92.247	-24.934	41.819	-7.493	-52.529	0.897	17.904
7	-2.845	-133.240	9.921	83.617	-24.672	40.685	-7.776	-58.558	0.973	17.296
8	-3.089	-142.838	8.995	75.663	-24.589	40.572	-7.830	-64.382	1.134	14.565
9	-3.033	-150.491	8.289	67.703	-24.245	41.184	-7.491	-73.571	1.111	14.241
10	-3.162	-158.259	7.397	61.030	-24.146	43.162	-7.675	-78.017	1.277	12.610
11	-3.038	-164.452	6.665	55.070	-23.777	45.575	-7.655	-85.600	1.276	12.063
12	-3.081	-170.917	5.992	48.845	-23.403	48.085	-7.419	-89.771	1.313	11.346
13	-2.928	-176.399	5.420	42.890	-22.891	51.213	-7.314	-96.389	1.254	11.121
14	-2.927	178.451	4.745	36.546	-22.301	53.205	-6.973	-102.799	1.235	10.602
15	-2.761	173.872	4.266	31.743	-21.655	56.242	-6.728	-109.778	1.133	10.748
16	-2.818	169.233	3.513	26.361	-20.843	57.375	-6.491	-116.046	1.134	9.951
17	-2.759	165.577	2.903	21.544	-20.051	59.400	-6.263	-122.072	1.081	9.739
18	-2.633	160.189	2.406	14.921	-19.255	59.630	-5.837	-128.257	0.964	10.830
19	-2.576	157.140	1.887	10.801	-18.534	59.326	-5.578	-134.326	0.908	10.211
20	-2.458	153.974	1.235	6.572	-17.704	60.255	-5.295	-139.888	0.841	9.469
21	-2.342	150.890	0.917	2.297	-16.915	58.203	-4.919	-145.353	0.721	8.916
22	-2.252	146.840	0.345	-2.243	-16.111	56.957	-4.568	-150.913	0.654	8.228
23	-2.052	143.492	-0.209	-6.853	-15.420	55.814	-4.256	-157.675	0.575	7.605
24	-1.925	140.757	-0.634	-11.205	-14.703	54.517	-4.004	-162.512	0.503	7.035
25	-1.920	137.444	-1.284	-13.842	-13.944	51.957	-3.527	-167.962	0.465	6.330
26	-1.847	134.467	-1.790	-17.131	-13.414	50.073	-3.272	-170.984	0.420	5.812

MAXIMUM RATINGS AT Ta = 25 °C

Symbol	Parameter	Units	Cont Max1	Absolute Max2
VDS	Drain to Source Volt.	V	See Safe Operating Limits	
Tch	Channel Temperature	°C	+150	+175
Tst	Storage Temperature	°C	-65 to +150	+175
Pin	RF Input Power	mW	200	300

Notes:

1. Exceeding any one of these limits in continuous operation may reduce the mean-time- to-failure below the design goal.
2. Exceeding any one of these limits may cause permanent damage.

Available Packaging:

70 Package - MwT-1F70
71 Package - MwT-1F71
73 Package - MwT-1F73

RoHS Compliance



CML Micro certifies, to the best of our knowledge, that its products comply with RoHS directive (2011/65/EU), as amended by Directive (EU) 2015/863.

REACH Compliance



CML Micro certifies, to the best of our knowledge, that its products do not contain any of the banned substances specified in the SVHC list at <https://echa.europa.eu/candidate-list-table>. CML Micro are committed to ensuring the safety of products and the compliance with regulations. Publications will be updated in the event that REACH control is compromised.

Contact Information

For further information please contact your local CML sales representative.
Contact details can be found at www.cmlmicro.com.

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